(12) UK Patent Application (19) GB (11) 2 176 155 A

(43) Application published 17 Dec 1986

(21) Application No 8604980

(22) Date of filing 28 Feb 1986

(30) Priority data

(31) 287187 (32) 3 Jun 1985 (33) ES

(71) Applicant
Land-Rover Satana S. A. (Spain),
Carretera de Vadollano, s/n. Linares, Jaen, Spain

(72) Inventor
Antonio Martinez Aldehuela

(74) Agent and/or Address for Service
Withers & Rogers, 4 Dyer's Buildings, Holborn,
London EC1N 2JT

(51) INT CL⁴
B60J 7/10

(52) Domestic classification (Edition H):
B7B 287 AC HH

(56) Documents cited
GB A 2099377
GB 1036946
GB 1594948

(58) Field of search
B7B
Selected US specifications from IPC sub-class B60J

# (54) Demountable vehicle roof

(57) A demountable roof for convertible vehicles having a roll-bar or bridge and comprising a U-shaped rear panel (1) and a substantially flat front panel (2). Adjacent edges of the front and rear panels bear on the roll-bar (3) and other edges (5, 6) bear on the bodywork, via interposed resilient seals. Lever operated connectors (15 - 21) are provided for rapidly mounting or demounting each panel.

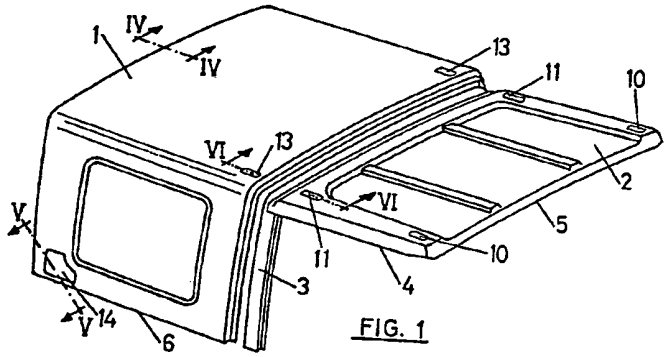


FIG. 1

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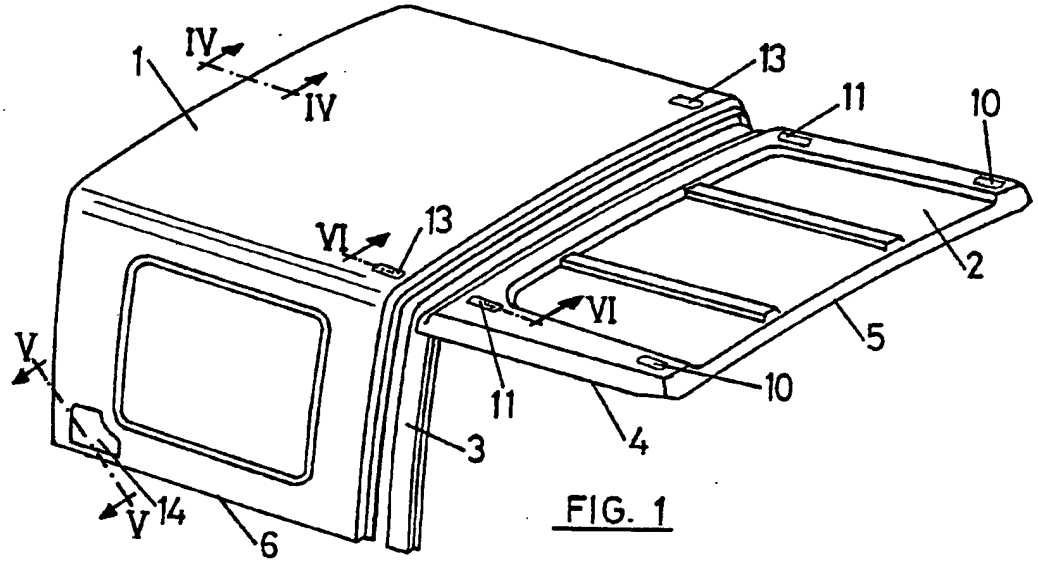
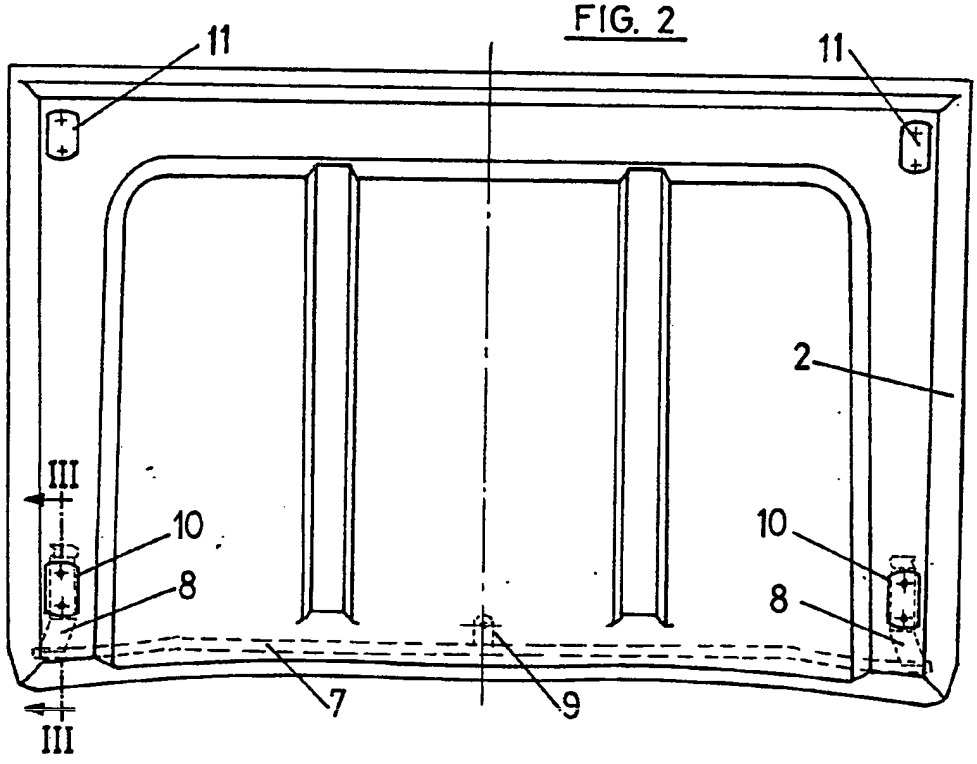



FIG. 1

FIG. 2



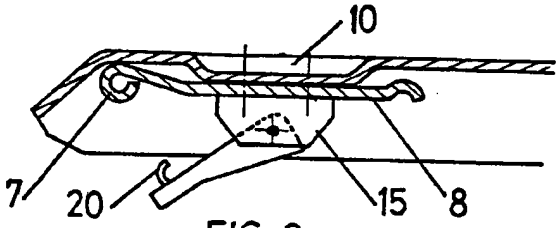



FIG. 3

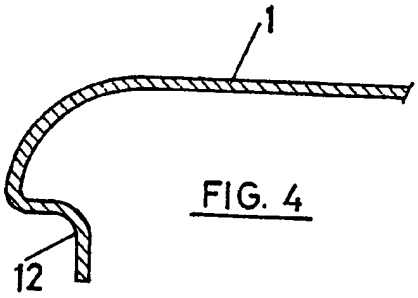



FIG. 4

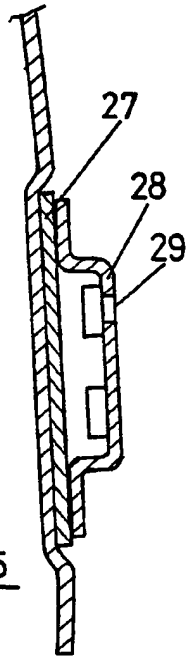



FIG. 5

FIG. 6

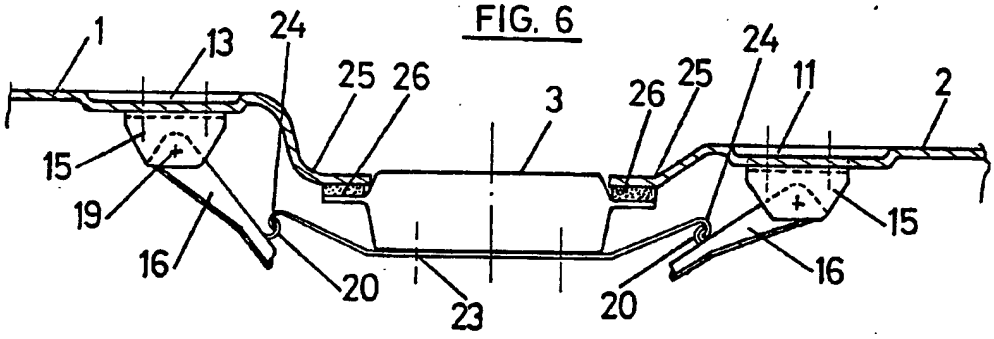



FIG. 7

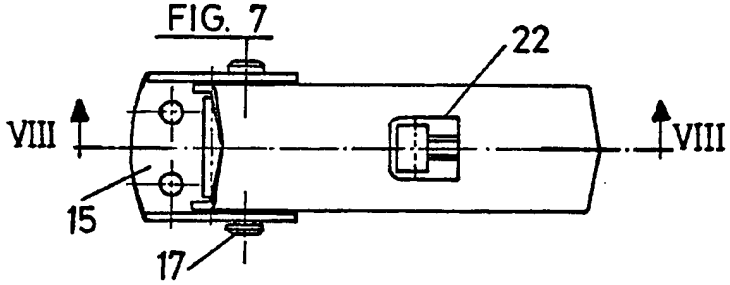
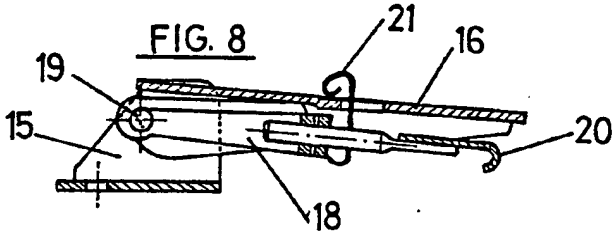



FIG. 8



SPECIFICATION

**Demountable roof for motor vehicles.**

The present invention relates to a demountable roof for motor vehicles, particularly convertible vehicles of the type known as "cross country" and similar vehicles.

Such convertible vehicles are usually fitted with a canvas or similar cover which rests on a frame mounted on the body of the vehicle. This frame comprises at least one central cross-bar or fixed bridge which forms part of the bodywork and which serves as a protective bar in the event of the vehicle overturning. This is why the bar is known as a "roll-over bar", a term which is used throughout the description to refer to such a bar.

The canvas cover on these vehicle only provides partial protection against the sun, wind and external agencies but does not enable complete closure or provide acceptable comfort in the passenger compartment. Nor does it have a satisfactory external appearance. On the other hand, the canvas and transparent window areas become damaged fairly easily so that it is necessary frequently to replace them. In addition, the location and fixing of this canvas proves to be a rather tiresome operation.

Rigid removable roofs for the type of vehicle in question are also known and generally consist of metal sheet so that in addition to being unattractive, they require considerable time for fitting and removal because usually they are fixed to the bodywork by means of a large number of screws.

One object of the present invention is to provide a demountable roof suitable for vehicles of the type indicated, fitted with a roll-over bar and of a rigid nature but the fitment and demounting of which can be carried out quickly and easily without special tools or expert labour.

Another object of the invention is to provide a demountable roof having an acceptable external appearance and which enables a perfect closure of the compartment, making it possible to acquire the desired interior confort.

Yet another object of the invention is to provide a demountable roof in which parts of the roof only (e.g. only the rear part of the roof, the front part or both) may be demounted.

According to the present invention, the demountable roof consists preferably of two independent panels, a rear panel in the form of a cover with a U-shaped cross-section and another front panel which is substantially flat and of approximately rectangular contour.

These two panels have their adjacent edges resting on the roll-over bar or bridge with an interposed flexible seal with which it is possible to obtain a fluid tight closure and an elastic support which does not suffer from vibrations or noise. The other edges of the two panels have a contour which coincides with that of the bodywork on whch it also rests through an interposed seal which offers a fluid tight closure and soundproof closure.

The two panels of which the froof is composed have on their inner surface means for rapid attachment to the vehicle. Said means consist of connectors which can be operated by a lever, which engage hooks rigid with the bodywork and roll-over bar of the vhicl .

The fixing hooks and connectors are disposed in such a way that the mounting and demounting of the panels can be carried out by simple operation of the connector locking lever.

The rear panel, the configuration of which is adapted to the U-shaped cover, has front and rear connectors which engage hoods which are situated respectively on the roll-over bar and on the bodywork of the vehicle. The front hooks are disposed inside in the bottom of the U-shaped cover close to the edge which rests on the roll-over bar while the rear hooks are situated on the inside on the walls of the said U-shaped member, close to the free rear vortex of the said walls.

With regard to the front panel, this includes front and rear connectors which engage hooks which are respectively disposed on the bodywork of the vehicle, on the frame which defines the windscreen and on the roll-over bar.

The front connectors of the rear panel and the rear connectors of the front panel may be aligned *inter se*, corresponding aligned hooks which are fixed to the roll-over bar being obtained from a single piece.

Both the front panel and the rear panel may be made from any material, preferably a plastics material. In this case, at least the front panel which is of approximately plane configuration, may have one or two of the edges parallel with the roll-over bar reinforced by a bar which may serve for attachment of the hooks adjacent to the corresponding edge of the panel.

The rear panel which is shaped in the form of a U-shaped cover defines on its rear edge an inwardly extending peripheral step which will serve as a moulding for support of the rear door of the vehicle.

An embodiment of the present invention will now be described by way of example with reference to the accompanying drawings in which:

*Figure 1* is a perspective view of a demountable roof comprising two panels;

*Figure 2* is a plan view of the front panel;

*Figure 3* is a cross-section on line III - III in Figure 2;

*Figure 4* is a partial cross-section to an enlarged scale taken on the line IV - IV in Figure 1;

*Figure 5* is a section to an enlarged scale, taken on the line V - V in Figure 1;

*Figure 6* is a diagrammatic cross-section through the roll-over bar with the adjacent portions of the front and rear panels resting thereon, including the fixing connectors;

*Figure 7* is a plan view of one type of connector suitable for attachment of the roof; and

*Figure 8* is a section taken on line VIII - VIII in Figure 7.

The roof illustrated in Figure 1 has two panels 1 and 2 of a U-shaped channelled cover referred to as the rear panel, the second panel 2 referred to as the front panel, being substantially flat and of approximately rectangular contours. Adjacent edges of these two panels rest on the roll-over bar 3 of the vehicle while the other edges rest on the free edges

f the vehicle bodywork. The front panel 2 has its transverse edges 4 and front longitudinal edge 5 resting on the surround or frame of the doors and front windscreen respectively. The rear panel 1 in turn has the fr e dges 6 of the walls resting on the edge of the sides of the body of the v hicle and defines at the rear an opening for the rear door of the vehicle.

Panels 1 and 2 are preferably made from a suitable plastics material which may be reinforced with glass fibre although they may also be made from any other type of material.

As can be seen in Figure 2, the front panel 2 is reinforced by a bar 7 abutting the inside surface of the panel to which it is fixed through end lugs 8 and intermediate lug 9. In the region of the attachment to the lugs 8, the panel 2 has recessed portions 10 as can be seen in Figure 3 on which the aforesaid lugs 8 bear and are fixed. In the same way, the panel 2 has recessess 11 close to the rear longitudinal edge.

The rear panel 1, as Figure 4 above, defines at its free rear edge an inwardly extending step 12 which serves as a moulding or frame for the rear door of the vehicle. This rear panel also has in its central portion close to the edge adjacent to the front panel 2, two recesses 13 of the same configuration and aligned with the recesses 11 of the front panel 2. On the lateral walls, the rear panel 1 has recesses 14 close to the free rear vertex.

The various aforesaid recesses in the front and rear panels serve for the fixing of connecting elements for attachment of both parts to the vehicle.

As can be seen in Figures 7 and 8, these connectors comprise a support 15 on which is articulated a lever 16 on a pivot spindle 17. Articulated in turn on this lever is an arm 18, mounted on a pivot spindle 19 disposed to the rear of the above mentioned pivot spindle 17. The arm 18 has at its free end a hook 20 and also carries a locking lug 21.

When the lever 16 is raised in relation to the position shown in Figures 7 and 8, the hook 20 is displaced to the right. When the lever 16 is lowered, the hook 20 moves back into the position shown in the drawings while at the same time the lug 21 is received through the aperture 22 in order to lock the lever 16.

The connectors shown in Figures 7 and 8 are fixed in the recesses 10, 11, 13 and 14 of the front and rear panels.

As can be seen in Figure 3, the support 15 of the two connectors is fixed on the lug 8 anchored to the recess 10, the hook 20 of the connectors being directed forwards for attachment on hooks or rings rigid with the bodywork of the vehivle on the frame which passes over the top of the front windscreen.

With regard to the recesses 11 and 13 of the panels 1 and 2, as Figure 6 shows, these receive the attachment of supports 15 of the corresponding connectors. In turn, the roll-over bar 3 has fixed to it a transverse plate 23 aligned with each pair of recesses 11 and 13, the plate being provided at its ends with hooks 24 for receiving the hooks 20 of th connectors in the retracted or locked position thereof.

As can also be seen from Figure 8, the front and rear panels have on their adja nt edges a st p 25, the end portion of which bears on th roll-over bar 3 through an interposed flexible gasket 26 which serves as a sound pr fing and waterproofing gasket seal.

Finally, as Figure 5 shows, the recesses 14 are fixed on the inside on a reinforcing plate 27 with which there is rigidly associated a bridge 28 provideed with screw threaded orifices or bores 29 for the attachement of the support 15 of the connectors, disposed in such a way that the hook 20 remains opposite a hook or ring rigid with the bodywork of the vehicle.

In order to fit the roof, the panels 1 and 2 are disposed in such a way that they bear adequately on the roll-over bar and on the free edge of the bodywork, the connector elements being opposite the connectors which are fixed to the bodywork. Th next stage is to operate the levers 16 of the connectors to achieve a mutual attachment of the corresponding movable hooks and thus of the panels 1 and 2.

Between the free edges 4, 5 and 6 of the front and rear panels and the edges of the bodywork of the vehicle it is also possible to fit waterproofing and soundproofing seals.

As can be appreciated, the panels 1 and 2 may be formed in a single piece in which case the panel 2 may be an extension of the central part or bottom of the panel 1, also resting on the roll-over bar 3 and having fixing connectors in the same locations.

In the same way, the shape and method of reinforcing the panels may be varied according to the amount of space to be covered. The free edges 4, 5 and 6 of the panels will be shaped in such a way as to fit the free edge of the bodywork of the vehicle.

CLAIMS

1. A demountable roof for motor vehicles particularly convertible vehicles, fitted with a roll-over bar or bridge, comprising two panels, a rear panel in the form of a cover of U-shaped cross-section and another front panel which is substantially flat and of approximately rectangular shape; wherein adjacent edges of the panels bear on the roll-over bar or bridge through an interposed elastic seal while the remaining edges of both panels are contoured to correspond with the bodywork on which they bear via an interposed seal, both panels having connectors operable by a lever to engage or disengage hooks on the bodywork and roll-over bar.

2. A roof according to claim 1, wherein panels have along their adjacent edges a step, the end portion of which bears on the roll-over bar of the vehicle through an interposed seal.

3. A roof according to claim 1, wherein the U-shaped cover panel has front and rear connectors which engage hooks disposed respectively on the roll-over bar and on the bodywork of the vehicle.

4. A roof according to claim 3, wherein the front hooks are disposed on the inside at the bottom of the U-shaped cover clos to the edge which bears on the roll-over bar and the rear hooks are situated on the inside on the walls of the U-shap d part, close to the

free rear vertex f the walls.

5. A roof according to claim 1, wherein the front panel comprises front and rear connectors which are attached to hooks disposed respectively on th body-work of the vehicl and on the roll-over bar.

6. A roof according to claims 4 and 5, wherein the front connectors of the rear panel and the rear connectors of the front panel are aligned *inter se*.

7. A roof according to any one of the preceding claims wherein at least one of the panels has fixed on the inside on one or both of its edges parallel with the roll-over bar, a reinforcing bar on which in turn are fixed the hooks adjacent to each edge.

8. A roof according to claim 1, wherein the rear edge of the U-shaped cover panel defines an inwardly extending peripheral step which serves as a moulding for support of the rear door of the vehicle.

9. A demountable roof for a motor vehicle having a roll-over bar or bridge, comprising two separate panels each having edges adapted to bear on the bodywork of the vehicle and on the roll-over bar or bridge through interposed resilient seals and each being securely held to the bodywork and the roll-over bar or bridge by quick-release lever operated connectors.

10. Demountable roof for motor vehicle constructed and arranged substantially as herein described with reference to and as illustrated in the accompanying drawings.

Printed in the UK for HMSO, D8818935, 10/86, 7102.
Published by The Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from which copies may be obtained.